ASHLY

MX-508
Stereo
Microphone / Line
Mixer

Operating Manual

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1. INTRODUCTION

Congratulations on your purchase of an Ashly MX-508 stereo mixer. In one compact rack-mount package we have combined features, reliability, and sonic performance previously found only in larger and more expensive mixing consoles. This second generation mixer is similar to the MM-508, with the addition of output mute switches on stereo outputs and double *or* single jack insert points on all input channels.

Other features include optional plug-in isolation transformers on all inputs, switchable +48V phantom power, and front panel switching on each channel selecting between mic or line input. Three-band equalization with a fixed frequency low and high shelf and a tunable mid-range control provides perfect true-reciprocal equalization curves. A concentric level and pan control combined with a concentric pair of auxiliary sends complete each input channel.

Ultra low-noise summing amplifiers combine the channel signals for the main and send outputs. Two 10-segment LED arrays monitor main or aux outputs. Standard line level outputs on 1/4" connectors, tape outputs on RCA connectors, and transformer isolated 600 ohm outputs on XLR connectors are provided as standard equipment. Ashly still uses professional quality 16mm metal shaft potentiometers on all controls for greater accuracy and long life.

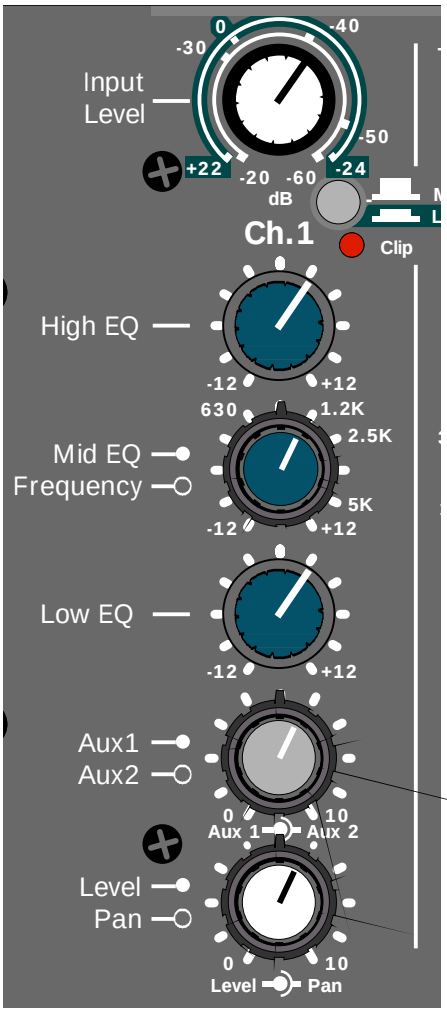
2. UNPACKING

As a part of our system of quality control, every Ashly product is carefully inspected before leaving the factory to ensure flawless appearance. After unpacking, please inspect for any physical damage. Save the shipping carton and all packing materials , as they were carefully designed to reduce to minimum the possibility of transportation damage should the unit again require packing and shipping. In the event that damage has occurred, immediately notify your dealer so that a written claim to cover the damages can be initiated.

The right to any claim against a public carrier can be forfeited if the carrier is not notified promptly and if the shipping carton and packing materials are not available for inspection by the carrier. Save all packing materials until the claim has been settled.

3. AC POWER REQUIREMENTS

The MX-508 mixer will perform normally from 93 to 125 volts AC, 50-60Hz (some export models are wired for 240 Volts and are labeled accordingly). Use only properly grounded AC receptacles. To reduce the risk of ground loop hum, use a central point for system AC power distribution. In the event of fuse failure, replace only with same type fuse. Power consumption is less than 50 watts.



4. CONTROLS

4.1 Input Level (Gain)

This control sets the operating level of the Microphone preamp and Line Input. Best signal to noise ratio is obtained with higher gain settings. It is therefore desirable to set the Gain control as high as possible while still leaving enough headroom (usually 20dB) to prevent distortion.

4.2 Mic-Line Switch

This switch selects between the XLR microphone input or the 1/4" line input jack as the signal source. It can also serve as a "channel mute" switch when selected to the unused input.

4.3 Channel Clip Indicator

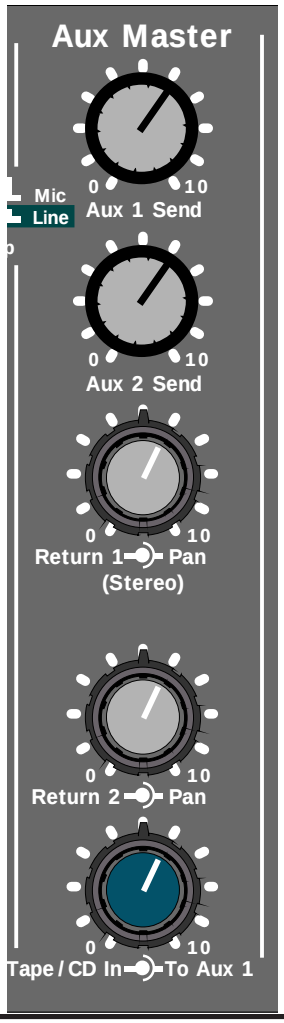
This peak sensitive indicator monitors all level critical points in the input channel and illuminates if any of them reach levels 3 dB below clipping.

4.4 Equalization

Channel EQ consists of a high shelf control at 15KHz (middle of shelf), a sweepable mid control, and a 70Hz low shelf control. The mid control is sweepable from 140Hz to 8KHz with a bandwidth of approximately 1 octave.

4.5 Aux Sends

These are an additional pair of level controls to adjust the feed to monitors or effects units. Aux 1 is factory preset to pre-fader, pre-EQ, while Aux 2 is post-fader, post-EQ. Both Aux sends can be internally switched to pre or post fader/EQ. *Note: See section on changing factory configurations.*



4.6 Level and Pan

This concentric pair of controls adjusts the level and stereo position of the channel.

4.7 Aux Master Sends

These controls adjust the overall gain of the output stages for the Aux 1 and Aux 2 outputs.

4.8 Aux Master Returns With Pan

These concentric level and pan controls adjust the returning signal from effects units or auxiliary inputs to the Main Left and Right outputs. Return 1 is stereo and return 2 is mono. If only the right connection to return 1 is made, this return will function as mono with pan.

4.9 Tape/CD Input and Send

This stereo level control adjusts the Tape/CD input to the Main Stereo outputs. The outer concentric control labeled "To Aux 1" sums the left and right Tape/CD inputs to a mono signal and applies it to the Aux 1 Master group for use with monitors or effects. It is "pre-fader", or independent of the stereo level control.

4.10 Output Meters

A pair of peak reading 10 segment LED meters are used to indicate output level. Green LED's are used below 0 VU, yellow above 0 VU and red LED's indicate clipping. 0 VU is equivalent to +4 dBu (1.228Vrms). This meter pair is switchable (with the headphone output) to either the Main Left and Right outputs or the Aux 1 and 2 outputs. The red clip LED's will illuminate if the summing amplifiers are clipping even if the main output controls are off, in which case one or more inputs must be turned down. *Note: The output meters are accurately calibrated to the transformerless output levels, but not necessarily the transformer-balanced outputs. See note on Transformer Balanced Outputs.*

4.11 Main Output Level

These controls determine the level of both transformer balanced and transformerless output stages for the Main Left and Right outputs.

4.12 Main Output Mutes

These switches turn off both the transformer-balanced outputs as well as the transformerless 1/4" stereo outputs, and indicate the mute mode by lighting the red LED near the switch. *The headphone and metering functions continue uninterrupted even though there is no signal on the mixer's main outputs.*

4.13 Phantom Power Switch

This front panel switch enables the 48 Volt phantom power supply for condenser microphones which can use this feature. One switch controls all the inputs. If you have a mix of condenser and dynamic microphones, the phantom power will not affect the operation of the dynamic mics.

4.14 Mono Output Level

This control adjusts the level of the summed mono output. It is completely independent of the Main Left and Right masters.

4.15 Headphones Level

This control adjusts the level of the designated output signal (Mains or Aux) to the headphone jack.

4.16 Meter/Phones Select

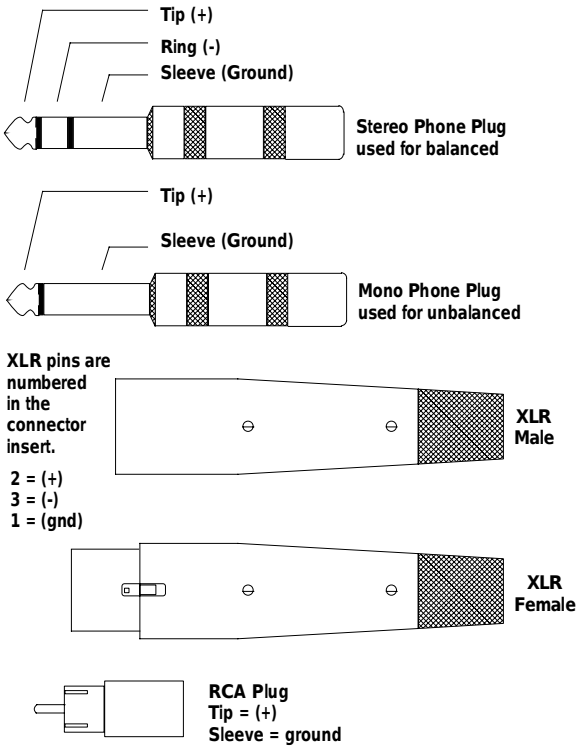
This switch selects either the Main Left/Right outputs or the Aux 1/Aux 2 outputs to the LED meters and the headphone jack.

4.17 Headphone Output

This front panel 1/4" TRS connector feeds a standard set of stereo headphones. A selector switch that also controls the level meter allows monitoring the main or Aux outputs.

5. CONNECTIONS AND CABLES

The MX-508 mixer is fitted with four types of audio connectors: 3-pin XLR type male (stereo outputs), 3-pin XLR type female (mic inputs), tip-ring-sleeve (TRS) phone jack, and RCA jack. Certain 1/4" jack connections use an unbalanced mono plug, which is also shown.

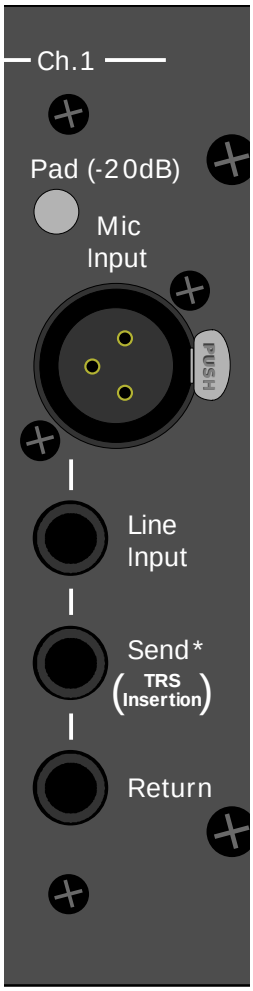


Two-conductor (twisted pair) shielded cable is best for all XLR type connections. Belden No. 8412, or its equivalent, is an excellent cable due to its heavy construction. This type of cable should be used for all portable applications. Snake cables containing multiple shielded pairs must be handled very carefully because the leads tend to be fragile, and a broken conductor is difficult to repair.

If low level and high level lines (e.g., microphones and mixer line outputs), or if either of these lines and speaker cables are run parallel for long distances, crosstalk may be significant. In fact, the crosstalk (signal leakage between cables) can cause an electronic feedback loop, oscillation, and possibly damage to the equipment. To minimize crosstalk, physically separate low level (microphone) cables from speaker cables by the greatest feasible distance. At any point where cables meet, run low level cables perpendicular to high level or speaker cables. If low and high level or speaker cables must be run parallel and in close proximity to one another, they should be bundled separately.

5.1 Microphone Input

The microphone input is an active balanced type with a nominal impedance of 1200 ohms. Its noise performance is best with a 200 ohm microphone. A plug-in transformer option is available if you need the isolation. The Mic input connector is a standard 3-pin XLR female with the shield on pin 1, the (+) in-phase connection on pin 2, and the (-) out-of-phase connection on pin 3.



5.2 Input Pad

The Pad is a 20dB attenuation switch on the rear panel for use with the XLR microphone input. It has no effect on the line input. It should normally be left in the "out" position for best signal to noise ratio and should only be used when the input is being overdriven with the Gain control at its minimum setting.

5.3 Line Input

The line input is a standard 1/4" TRS active balanced connection, with a balanced input impedance of 20KΩ. It will accommodate a wide range of input levels.

5.4 Channel Send And Return Patch

A channel patch point allows a device such as graphic equalizer, noise gate, compressor/limiter, remote level controller, or direct out recording device to be used on individual channels. The MX-508 has both single jack insert capabilities as well as separate send and return jacks.

- To use separate send and return jacks, use the send jack to feed the input of the device to be inserted, and use the return jack for the output of the inserted device. ***You must use unbalanced (tip-sleeve) mono plugs for this configuration.***

- To use the single jack insert, use a TRS (stereo) plug in the send jack only, where the send output signal is on the tip, and the return signal is applied to the ring. This convention is most common among mixers.

- To use the send jack as a Direct Line Output (pre EQ), you must use a special cable with tip and ring connected at the MX-508 Send and a tip-sleeve mono plug at the other end. Connecting tip and ring at the mixer send jack is necessary for uninterrupted signal within the mixer when using direct line outputs.

5.5 Aux Send Outputs

The Aux Outputs are used to drive monitors, effects processors, recording devices, or any function which requires isolated level control from the main outputs. They are pseudo-balanced 1/4" tip-ring-sleeve.

5.6 Aux Return Inputs

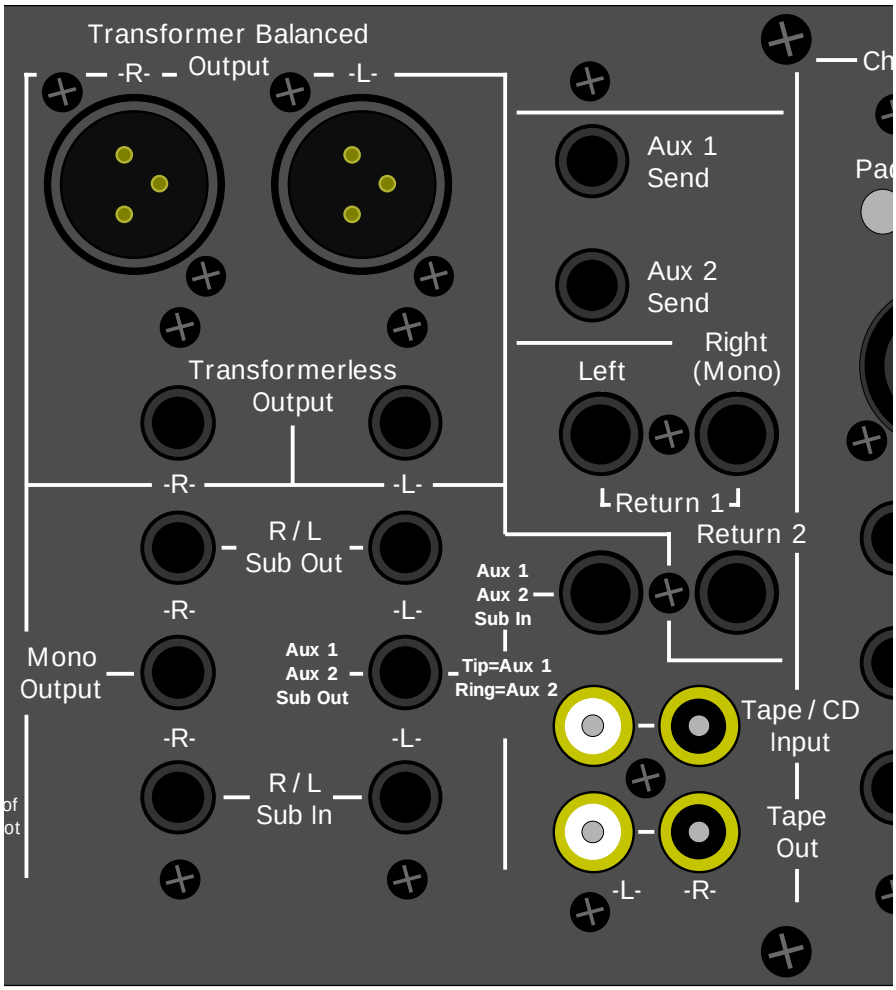
The return inputs are 1/4" unbalanced. Return 1 is stereo with a left and right input, while Return 2 is mono. To use return 1 as mono, connect only to the Right return 1 input.

5.7 Tape/CD Input - Tape Output

The stereo inputs on RCA connectors have a nominal operating level of -10dBu to match most tape decks and CD players. The tape outputs are -10dBu "pre-master", so they are not affected by the settings of the Main output controls.

5.8 Transformer Balanced Outputs

The transformer outputs use male XLR type connectors and provide total isolation for 600 ohm lines. Pin 1 is ground, pin 2 is (+), and pin 3 is (-). These outputs are controlled by the Left and Right Master levels, with a nominal operating level of +4dBu.



Note: The transformer-balanced outputs are designed to drive up to +24dBu into 600 ohm loads. Because of the nature of an output transformer, the output level increases as the impedance of the terminating load becomes higher than 600 ohms. Whereas a "direct-coupled" output stage like that of the transformerless outputs will not change as the load changes, any transformer used in an audio path is affected by its termination impedance. Since line level inputs on audio devices are typically 10KΩ or higher, expect a slight increase (2.5dB) in output level when driving high impedance inputs with the transformer outputs. The output meters will remain accurately calibrated to the levels present on the transformerless outputs, regardless of the load on the transformer outputs.

5.9 Main Outputs

These Main Outputs are also controlled by the left and right master. They are 1/4" pseudo-balanced TRS jacks with a nominal operating level of +4dBu into any load.

5.10 Sub Outputs

These outputs are generally used to feed another mixer's Sub Inputs for expanded input capacity. The Main left and right submaster outputs use unbalanced (mono) 1/4" connectors. The Aux submaster outputs use 1/4" TRS connectors with Aux 1 on the tip and Aux 2 on the ring.

5.11 Mono Output

This output is a function of the Mono Level Control, which is a pre-Master summed output from the left and right mix busses. Like the main outputs, it is pseudo-balanced with a nominal level of +4dBu.

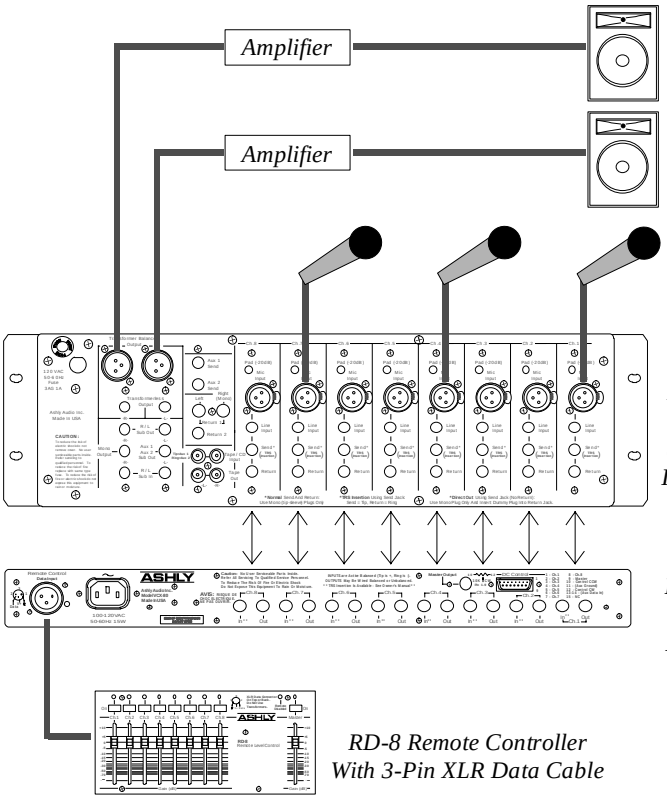
5.12 Sub Inputs

These inputs are useful for linking together two or more mixers for expanded input capacity, and include Main left, Main right, and Aux 1/Aux 2. Signal to the Sub Inputs is taken from the Sub Outputs of another mixer, with a nominal level of +4dBu. The Aux submaster input requires Aux 1 on the tip and Aux 2 on the ring.

6. TYPICAL APPLICATIONS:

6.1 Small Sound Reinforcement System:

In the setup shown here, the MX-508 is used to mix typical sound sources that might be found in a small club, school theater or similar environment. Six of the input channels are used for microphones for live vocal or instrumental pickup. The remaining two channels are used for playback from a stereo tape recorder, such as might be used during intermission, for backup, for special recorded effects, etc. The power amplifier (or any additional equalizers or electronic crossovers which may be used) is fed from the transformer balanced Output connectors.


Amplifier
Amplifier
Speaker Zone 1
Speaker Zone 2
8 Mic/Line Inputs
8-Channel Microphone Mixer (Single Jack Inserts Used)
VCX-80 Patched Into Channel Insert Points
RD-8 Remote Controller With 3-Pin XLR Data Cable

6.2 Meeting Room, Board Room, or Church Mixer Using Remote Control:

In this example, the MX-508's send/return insert jacks are interfaced with an Ashly VCX-80 eight channel remote level controller, allowing a full-featured mixer to be operated from a distance by a non-technical person. Once initially set up, the RD-8 desk-top remote controller (or RW-8 if a wall-plate version is desired) can be located far away (up to 1/4 mile) from the main audio equipment rack using a single balanced XLR cable, allowing for simplified sound system operation. A limited number of knobs, lights, and buttons saves the VIP operator from distraction and potential embarrassment, while giving them a great deal of overall system control. While only two zones are shown, the MX-508 can independantly control audio to five different zones at once. Each of these zones could just as easily be controlled by the VCX-80 by interfacing with the mixer's outputs.

6.3 Location Recording or Broadcast Mixing:

In this setup the MX-508 is used to mix sources typically found in location recording or broadcast situations (mostly microphones). In this case, two of the microphones are wireless types, so the channel input actually comes from the microphone receivers. Since the output from the mic receivers is at line level, the input selectivity of the respective channels must be set accordingly. The Tape Out jack feeds a portable tape recorder, and the tape recorder's line output is brought back to the Tape/CD Input connectors for monitoring. For live remote broadcast applications the Mono Out connector can feed a suitable TELCO interface.

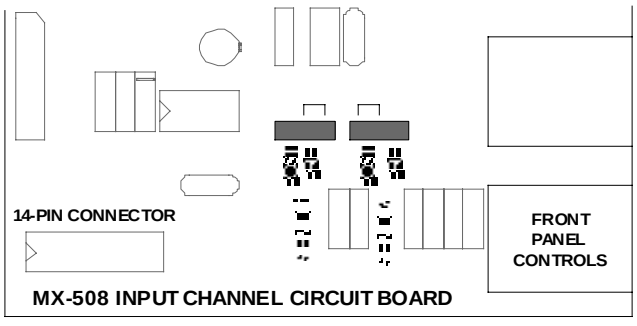
6.4 Submixer In Larger Sound System:

In this application the MX-508 is used to provide a drum mix to the main mixer without tying up a number of channels on the main console. Up to eight mics can be "pre-mixed" in stereo, with all drum-specific gating, compression, and effects controlled directly by the drummer. Either the main OUTPUT or the SUB OUT connectors can be used to feed the mixed drum signal to the main mixer. If there is significant distance between the MX-508 and the "master" mixer, use the pseudo-balanced or transformer-balanced Main outputs for long cable runs, otherwise use the unbalanced Sub outputs.

7. CHANGING FACTORY CONFIGURATIONS

7.1 Changing the Aux Pre/Post Assignment

The MX-508 is shipped from the factory with Aux 1 assigned Pre-Fader/EQ, and Aux 2 Post-Fader/EQ. Each channel's Aux Send controls may be independently configured for either pre or post fader/EQ operation with a minimum of tools and no soldering. To make this change, refer the following procedure to a qualified service technician:



Unplug the unit's AC power cord from the outlet. Remove the bottom cover which is fastened by seven 6-32 screws. Locate the 3 pin headers labeled Send 1 and Send 2 near the front of each input channel circuit board (see diagram). Remove the shunt bar from the factory installed position indicated on the circuit board legend and place the shunt on the other position of the 3 pin header.

7.2 Installation of Input Transformers

The MX-508 is designed to accept optional plug-in input isolation transformers with a minimum of tools and no soldering. Instructions for installation are included with the kit when you purchase an Ashly MX-508 ITC-Kit (no. 40A5902)

8. TROUBLESHOOTING TIPS

8.1 No Sound

Check the AC power. Is the power switch on and illuminated? Check the level meters. If they are operating, either the problem is between the mixer and the later components in the system, or else the Output Mute switches are pressed. If there is no meter activity, check to see you really have an input signal and that it is on the desired channel, or check to see that the meter select switch is set to Left/Right. Check that you have the master gain controls at the desired operating level.

8.2 Distorted Sound

Something is being overdriven in the signal path. If the clip indicators are active, reduce the channel gain controls and/or press in the pad switch on the rear panel. If the level meters are constantly in the red, reduce the Master gain and increase the gain of components following the mixer. There are many gain adjustments in the mixer itself and probably several others in other system components which makes it possible to overdrive an input section and then incorrectly try to reduce the gain of the output section. The best way to approach setting gains is to establish the operating level of input stages first by setting their gain as high as possible but leaving about 20dB of headroom for loud peaks, then move on to set the master gain to produce a good meter reading. Proceed to set the gain of equalizers, limiters, crossovers, and amplifiers following the mixer in the same manner, always working toward the later stages of the system.

8.3 Excessive Noise

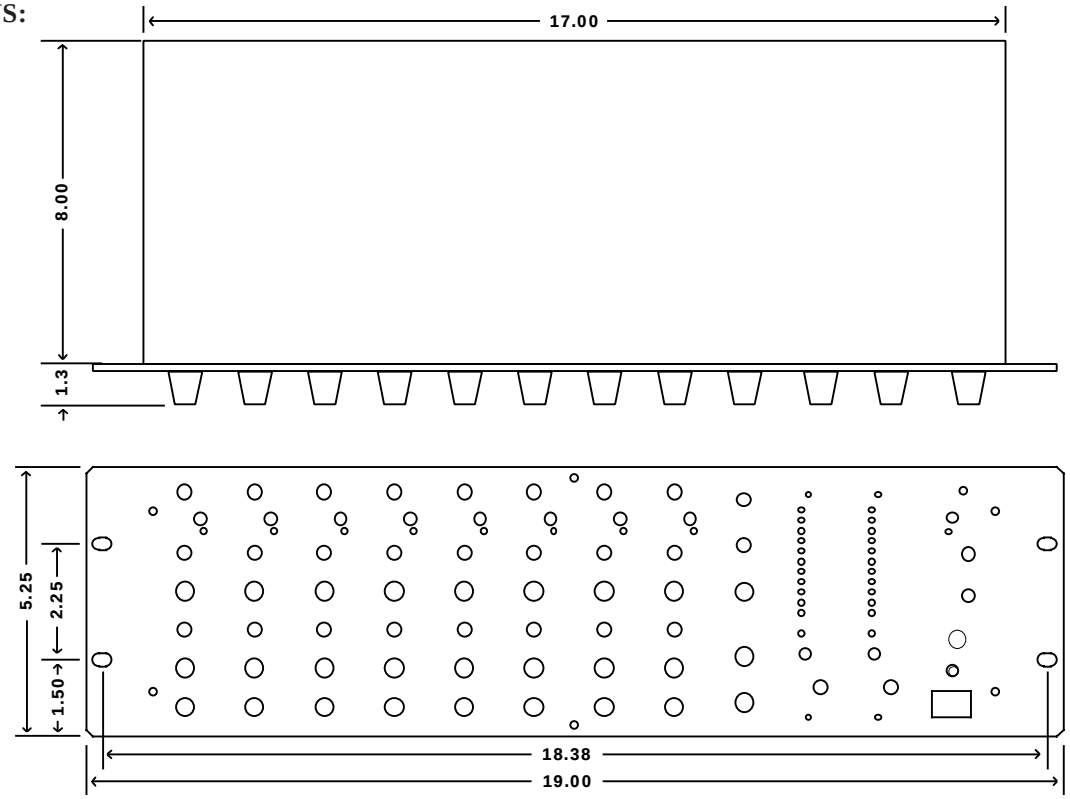
If the noise is in the form of hiss, the problem is usually due to an input stage set up for low gain and then compensating by increasing the master gain. Check that the Pad switch is not enabled unnecessarily. Turn up the channel gain controls and reduce the master gain.

8.4 Excessive hum

This is usually caused by "ground loops" in the system wiring. A complex sound system with many sources separated by significant distance and using several power outlets has many opportunities for this problem to occur. If possible, feed everything in the system from one power source with a common ground. Use balanced input and output connections between widely separated components.

If you need help, get in touch with your Ashly dealer or call an Ashly technical service representative at 1-800-828-6308 ext. 125.

9. DIMENSIONS:



10. SPECIFICATIONS

DISTORTION
THD at +4 dBu, 20Hz-20KHz ..... <0.05%
THD at +20dBu, 30Hz-10KHz ..... <0.05%
IMD (SMPTE) at +20dBu ..... <0.05%

HUM & NOISE (20Hz-20KHz at max preamp gain)
equivalent input hum and noise ..... <-129dBu
equivalent input hum and noise
with input transformer option ..... <-128dBu
residual output noise, TRS outputs,
all levels at minimum ..... <-100dBu
residual output noise, XLR outputs, ... <-90dBu
Master Level at nominal,
all Ch. Level controls at min ..... <-78dBu
Master Level and one Ch. Level at nom. ..... <-67dBu
Aux 1 or 2 Out, Aux Master at nominal
and all Ch. Aux at min, ... <-88dBu
Aux 1 or 2 Out, Aux Master and
one Ch. Aux at nom ..... <-67dBu

MAXIMUM VOLTAGE GAIN (±2dB)
MASTER
Mic Input to Master Output, 600 ohm load 84dB
Line Input to Master Output, 600 ohm load 42dB
AUX SENDS
Mic Input to Aux Master Output, pre ch. level 76dB
Mic Input to Aux Master 2 Output, post ch. level 92dB
SUB Input to Master Output 12dB
AUX RETURNS 1 or 2 to Master Output 30dB
TAPE/CD In to Master Output 34dB

FREQUENCY RESPONSE
20Hz-20KHz ..... +0.5/-1.0dB
50Hz-10KHz ..... +0/-0.5dB

EQUALIZATION
Low ..... ±12dB at 70Hz, shelving
Mid ..... ±12dB peaking, 140Hz-8KHz
High ..... ±12dB at 15KHz, shelving

CROSSTALK
adjacent inputs, 20Hz-20KHz ..... <-65dB
Mic Input to Master Output, 1KHz ..... <-65dB
Mic Input to Master Output, 20KHz ..... <-55dB

VU METERS
Selectable to Main or Aux Outputs ..... 0VU = +4dBu

PEAK INDICATORS
Peak Clip indicator on each input channel and left and right outputs, illuminates 3dB below clipping

PHANTOM POWER
+48 VDC applied to all Mic Inputs, switchable on front panel. Maximum total current draw = 80mA. Maximum single channel current draw = 14mA. Gradual power-up and down to eliminate "pops".

SHIPPING WEIGHT
19 lbs. maximum with 8 input transformer options installed

POWER REQUIREMENTS
120 VAC nominal, 93 VAC minimum, 50-60 Hz,
35 watts (240 VAC available)

**unless otherwise stated, specification conditions are: 150Ω source, Input Level set at "-60", all other controls set at nominal, XLR outputs into 600Ω or greater.*

11. WARRANTY INFORMATION

Thank you for your expression of confidence in Ashly products. The unit you have just purchased is protected by a five-year warranty. To establish the warranty, be sure to fill out and mail the warranty card attached to your product. Fill out the information below for your records.

Model Number _____

Serial Number _____

Dealer _____

Date of Purchase _____

Dealer's Address _____

Dealer's Phone _____

Salesperson _____

12. SCHEMATIC DIAGRAMS

MX-508 Power Supply Card Schematic

MX-508 Left and Right Output Card Schematics

MX-508 Send/Return Card Schematic

MX-508 Input Channel Card Schematic

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